**The human mind**

***Writing.* Read this paragraph about personality, which is written in a fairly informal style.**

Things happen to us because of our personality - chance doesn't have much to do with it. People who know about the brain and psychology think babies already have a personality. You can tell by what they do when things happen around them. The main things about our personality don't change much. By the time we're old enough to go to university, it's more or less fixed.

**The following paragraph expresses similar ideas in a more academic style. Complete the paragraph by choosing the best words from the box, making any necessary changes to them.**

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| **act establish force key play point respond suffer undergo wheel** |

Our personality is the driving **1**............................. behind the experiences we **2**.............................. and the evidence suggests that chance may **3**................................ only a small role. Some brain and psychological research strongly **4**............................... to the fact that many of the **5**............................... elements of our personality are present from birth, identifiable in the way our brain **6**.................................to the world. Furthermore, they are firmly and largely irrevocably **7**................................. by the time we are of university age.

***Vocabulary.*** **Match each of these definitions with the correct word in the box. This will help you when you read the passage on the opposite page, as all the words are used in it.**

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| **complementary conscious entity equivalent inference investigate pragmatic soluble** |

1. awake, thinking and aware of what is happening around you
2. solving problems in a realistic way which suits the present conditions, rather than obeying fixed theories, ideas or rules
3. an opinion or guess that something is true based on the information that you have
4. capable of being solved (a problem)
5. having the same amount, value, purpose or qualities
6. to examine a crime, problem, statement, etc. carefully, especially to discover the truth
7. something which exists apart from other things, having its own independent existence
8. useful or attractive together, completing each other

***Reading.* Read the article, timing yourself as you read (**about 675 words).

**Look at the following theories and the list of people below. Match each theory with the person to whom it is ascribed. You may use any letter more than once.**

1. Consciousness may require certain materials to function in ways that we are unaware of.
2. Computers function because of the way they are organised, not the material they consist of.
3. The universe can be divided into consciousness and physical objects.
4. Science is limited to certain types of problems.
5. Computers may seem to think like human beings without actually doing so.
6. We can never be sure that other people are conscious.

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|  |  | **List of People** |  |  |
| **A** | **Turing** | **D Penrose** | **F** | **Descartes** |
| **В** | **Searle** | **E Fenwick** | **G** | **Berkeley** |
| **С** | **Medawar** |  |  |  |

**What is consciousness?**

**Is the brain simply a computer, and is consciousness merely the feeling we get when we think? Or is consciousness a primary component of the universe, which the brain can tune in to, like a radio receiver?**

There are three points of view. The first, which can be traced back to the founder of modern computing, Alan Turing, is pragmatic. Turing pointed out that it is impossible to know whether other human beings are conscious. Because we feel conscious, we assume other people must be like us. But this can only be an inference. However, suppose we made a computer - a robot -that could spontaneously behave like a person. It would appear conscious - and since, in judging the consciousness of others, appearances are all we have to go on, why not assume it is conscious?

This reasoning has the feel of the old saying: 'If it looks like a duck and quacks like a duck, then it is a duck' - adequate for some purposes, but of little use for understanding ducks and how they evolved. As the American philosopher John Searle has pointed out, it is possible to make computers that imitate all kinds of human thinking, but that does not mean they think as we do. An imitation of consciousness does not necessarily show consciousness.

Turing showed that a machine’s ability to compute does not depend on what it is made of. All that matters is that the parts of the machine should be arranged appropriately. If a computer was sufficiently complex, then it, like the brain, would become conscious - or at least would appear to do so, which (so Turing said) is the only way to judge whether it is or not.

Searle's supporters ask us to imagine replacing a single neuron in the brain with a silicon chip that precisely imitates that neuron; that is, is 'functionally equivalent'. Would the brain still be conscious? The answer is surely 'yes'. If we continue to replace neurons, in the end we would have produced an all-silicon brain that retained the consciousness of the original.

However, we cannot replace even one of the billions of neurons in the brain with a 'functionally equivalent' microchip unless we understand the function of the original neuron. Yet complete understanding is impossible because, as the British zoologist Sir Peter Medawar commented, science is merely 'the art of the soluble'. Science answers only those questions that scientists ask and which they are technically able to investigate. It is impossible in theory, as well as in practice, to replace all the neurons of the brain with 'functionally equivalent' chips, since we can never know whether the replacement chips were so functionally equivalent or not. This leads on to a line of reasoning totally opposed to Turing's.

Perhaps, some suggest, consciousness is not just a matter of computational complexity. Perhaps the material of which the brain is made matters very much, and only entities made of flesh are truly capable of consciousness.

The Oxford mathematician Roger Penrose has suggested that consciousness involves physical principles not yet understood. Perhaps the flesh-and-blood brain has the chemistry required to use the physics required to produce consciousness, while silicon chips lack this ability?

An even more radical notion is being explored by physicists and brain specialists such as Dr Peter Fenwick. The idea is that philosophers and scientists have completely misunderstood the nature of consciousness and of the universe. For, until now, three main views have prevailed.

One is the 'dualism' of Rene Descartes (1596-1650), which says the universe has two components - matter (that is, physical substance or material) and mind. The second is the modern orthodox idea - that only matter 'exists'. The third, reflected in the philosophy of Bishop Berkeley (1685-1753), is that only thought is real, and matter is an illusion.

But the emerging modern view is that matter and consciousness are not separate entities, but *complementary* aspects of the universe, like two sides of a coin, or the space-time continuum. If this view of consciousness is right, our current understanding of science will be turned upside down.